providing a leadframe configured for wire bonding to the die;

providing a cyanoacrylate adhesive material formulated to cure in less than about 60 seconds at a temperature of about 20°C to 30°C and at an ambient atmosphere;

providing a filler in the adhesive material selected to improve a characteristic of the adhesive material in the package;

applying the adhesive material to the leadframe or to the die;

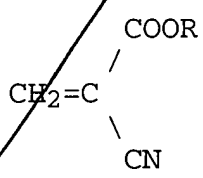
placing the die on the leadframe with the adhesive material in contact with the die and the leadframe to form an adhesive layer therebetween; [and]

curing the adhesive material at the temperature and at the ambient atmosphere in less than about 60 seconds to bond the die to the leadframe;

wire bonding the die to the lead frame; and

encapsulating the die.

2. (thrice amended) The method of claim 1 wherein the adhesive material [comprises a monomer with] has a formula:



wherein R comprises a hydrocarbon group.

3. (thrice amended) The method of claim 1 further comprising applying a catalyst to the leadframe, to the die, or to the adhesive material prior to [accelerate] the curing step.

4. (thrice amended) The method of claim 1 wherein the leadframe comprises a lead-on-chip leadframe and the filler is selected to increase [a] dielectric strength of the adhesive layer.

5. (thrice amended) The method of claim 1 [further comprising providing] wherein the filler is selected to improve [a] thermal conductivity, [a] mechanical strength, [an] electrical conductivity, [a] dielectric strength, [a] moisture resistivity, or [a] thermostability of the adhesive material in the package.

6. (thrice amended) A method for packaging a semiconductor die to form a semiconductor package comprising:

providing a leadframe comprising a plurality of lead fingers configured to support the die and for wire bonding to the die;

providing a cyanoacrylate adhesive material formulated to cure in less than about 60 seconds at a temperature of about 20°C to 30°C and at an ambient atmosphere;

providing a filler in the adhesive material selected to improve [a thermal conductivity, a mechanical strength, an electrical conductivity, a] dielectric strength, [a moisture resistivity, or a thermostability] of the adhesive material in the package;

applying the adhesive material to the leadframe or to the die;

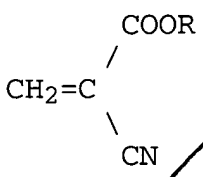
placing the die on the leadframe with the adhesive material compressed between the die and the leadframe to form an adhesive layer therebetween; [and]

curing the adhesive layer at the temperature and the ambient atmosphere in less than about 60 seconds;

wire bonding the die to the lead fingers; and

encapsulating the die.

7. (thrice amended) The method of claim 6 wherein the adhesive material [comprises a monomer with] has a formula:



wherein R comprises a hydrocarbon group.

8. (thrice amended) The method of claim 6 wherein the applying step [is performed using] comprises a method selected from the group consisting of syringe dispensing, stenciling, dip coating, spraying, and dot shooting.

9. (thrice amended) The method of claim 6 wherein the applying step [is performed by] comprises forming a plurality of dots of the adhesive material on the leadframe.

10. (thrice amended) The method of claim 6 wherein the filler comprises SiO_2.
[a material selected from the group consisting of SiO_2, Al_2O_3, AlN, Ag, Ni, Fe, SiC, and polystyrene coated Ni.]

11. (thrice amended) The method of claim 6 further comprising applying a catalyst to the leadframe, to the die, or to the adhesive material prior to [accelerate] the curing step.

12. (thrice amended) A method for packaging a semiconductor die to form a semiconductor package, comprising:

providing a leadframe comprising a plurality of lead fingers configured for wire bonding to the die;

applying an adhesive material on the lead fingers or on the die, the adhesive material comprising a cyanoacrylate

adhesive formulated to cure in less than about 60 seconds at a temperature of about 20°C to 30°C and at an ambient atmosphere, and an electrically insulating filler configured to increase a dielectric strength of the adhesive material to inhibit cross talk between the lead fingers in the package;

placing the die on the lead fingers with the adhesive material in contact with the die and the lead fingers to form an adhesive layer therebetween; [and]

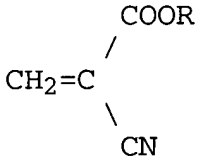
curing the adhesive layer at the temperature and the ambient atmosphere in less than about 60 seconds to bond the die to the lead fingers;

wire bonding the die to the lead fingers; and

encapsulating the die.

13. (thrice amended) The method of claim 12 further comprising applying a catalyst to the lead fingers, to the die or to the adhesive material prior to the [placing step, to accelerate the] curing step.

14. (thrice amended) The method of claim 12 wherein the adhesive material [comprises a monomer with] has a formula:

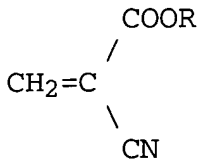


wherein R comprises a hydrocarbon group.

15. (thrice amended) A method for packaging a semiconductor die to form a semiconductor package, comprising:

providing a leadframe configured for wire bonding to the die;

providing an adhesive material [comprising a cyanoacrylate monomer] having a formula:



wherein R is a hydrocarbon group, the adhesive material formulated to cure in less than about 60 seconds at a temperature of about 20°C to 30°C and at an ambient atmosphere;

providing a filler in the adhesive material selected to improve a characteristic of the adhesive layer in the package;

[comprising a material selected from the group consisting of SiO_2, Al_2O_3, AlN, Ag, Ni, Fe, SiC, and polystyrene coated Ni;]

applying the adhesive material to the leadframe or to the die;

applying a catalyst to the leadframe or to the die;

placing the die on the leadframe with the adhesive material compressed between the die and the leadframe to form an adhesive layer therebetween; [and]

curing the adhesive layer at the temperature and the ambient atmosphere in less than about 60 seconds by interaction of the adhesive material with the catalyst to bond the die to the leadframe;

wire bonding the die to the lead frame; and

encapsulating the die.

16. (thrice amended) The method of claim 15 wherein the catalyst comprises a compound selected from the group consisting of water [or] and acid.

17. (thrice amended) The method of claim 15 wherein the filler comprises a material selected from the group consisting of SiO_2, Al_2O_3, AlN, Ag, Ni, Fe, SiC, and polystyrene coated Ni.

[further comprising selecting the filler to improve a characteristic of the adhesive layer in the package.]

18. (thrice amended) The method of claim 15 wherein the leadframe comprises a mounting paddle for supporting the die.
[in the package.]

19. (thrice amended) The method of claim 15 wherein the leadframe comprises a lead-on-chip leadframe comprising a plurality of lead fingers configured for wire bonding to the die and for supporting the die in the package.

20. (thrice amended) The method of claim 15 wherein the applying step [is performed using] comprises a method selected from the group consisting of syringe dispensing, stenciling, dip coating, spraying, and dot shooting.

21. (thrice amended) A method for packaging a semiconductor die to form a semiconductor package comprising:

providing a leadframe configured for wire bonding to the die;

providing an adhesive material comprising an anaerobic acrylic formulated to cure in less than about 60 seconds at a temperature of about 20°C to 30°C and at an ambient atmosphere;

providing a filler in the adhesive material comprising a material selected from the group consisting of SiO_2, Al_2O_3, AlN, Ag, Ni, Fe, SiC, and polystyrene coated Ni;

applying the adhesive material to the leadframe or to the die;

placing the die on the leadframe with the adhesive material compressed between the die and the leadframe to form an adhesive layer therebetween; [and]

curing the adhesive layer at the temperature and the ambient atmosphere in less than about 60 seconds to bond the die to the leadframe;

wire bonding the die to the lead frame; and

encapsulating the die.

22. (thrice amended) The method of claim 21 further comprising [initiating] accelerating the curing step using ambient humidity on the leadframe or the die.

40. (twice amended) The method of claim [22] 21 further comprising applying a catalyst to the leadframe, to the die, or to the adhesive material prior to the curing step.

41. (twice amended) The method of claim [40] 21 wherein the leadframe comprises a lead-on-chip leadframe comprising a plurality of lead fingers configured for wire bonding to the die and for supporting the die in the package.

42. (twice amended) A method for packaging a semiconductor die to form a semiconductor package, comprising:

providing a leadframe comprising a plurality of lead fingers configured to support the die and for wire bonding to the die;

providing an adhesive material comprising an anaerobic acrylic formulated to cure in less than about 60 seconds at a temperature of about 20°C to 30°C and at an ambient atmosphere;

providing a filler in the adhesive material selected to improve [a thermal conductivity, a mechanical strength, an electrical conductivity, a] dielectric strength, [a moisture resistivity, or a thermostability] of the adhesive material in the package;

applying the adhesive material to the die or to the leadframe;

[applying a catalyst to the leadframe or to the die;]

placing the die on the leadframe with the adhesive material in contact with the die and the leadframe to form an adhesive layer therebetween; [and]

curing the adhesive material at the temperature and at the ambient atmosphere in less than about 60 seconds [by interaction of the adhesive material with the catalyst] to bond the die to the leadframe;

wire bonding the die to the lead fingers; and

encapsulating the die.

43. (twice amended) The method of claim 42 wherein the leadframe comprises a lead-on-chip leadframe.
[comprising a plurality of lead fingers for supporting the die.]

44. (twice amended) The method of claim 42 wherein the filler comprises SiO_2.
[a material selected from the group consisting of SiO_2, Al_2O_3, AlN, Ag, Ni, Fe, SiC, and polystyrene coated Ni.]

REMARKS

Rejections Under 35 USC §112, second paragraph

Claims 4-11 and 42-44 have been rejected under 35 USC §112, second paragraph, as being indefinite. In response to these rejections claims 4, 5, 6, and 42 have been amended to delete occurrences of the words "a" and "an" before the recited characteristic of the adhesive material.

Rejections Under 35 USC §103

Claims 1-20 have been rejected under 35 USC 103(a) as being upatentable over DiLeo et al in view of either Nishino et al. (US Patent No. 5,739,205) or Litke (US Patent No. 4,533,422).